

1. A process for the production of L-aldonolactone from L-aldohexose by a microorganism belonging to the genus *Pseudomonas* or *Gluconobacter* capable of producing L-aldonolactone from L-aldohexose, and, optionally, isolating the L-aldonolactone from the reaction mixture, wherein the L-aldonolactone is selected from the group consisting of L-gulono-1,4-lactone, L-gulonic acid, L-galactono-1,4-lactone, and L-galactonic acid and the L-aldohexose is selected from L-gulose or L-galactose.
2. The process according to claim 1 wherein the microorganism is *Pseudomonas putida* or *Gluconobacter oxydans*.
3. The process according to claim 2 wherein the microorganism is *P. putida* ATCC 21812 or *G. oxydans* IFO 3293.
4. The process of claim 1 wherein the microorganism is used in a growing culture or a resting cell reaction.
5. The process of claim 1 wherein the process is conducted for 1 to 120 h at a pH in the range of from about 1 to about 9 and at a temperature in the range of from about 13°C to about 45°C.
6. The process of claim 5 wherein the process is conducted for 1 to 120 h at a pH in the range of from about 2 to about 8 and at a temperature in the range of from about 18°C to about 42°C.

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